

REMARKS:

Claims 28-38 were rejected under 35 USC 103(a) as unpatentable in view of Andersson (PNAS 93: 5682-5687) and Bailey (WO 98/12913). Regarding the previous arguments, the Examiner has stated that "Applicants argue that the instant invention does not involve mitochondrial oxidation nor facilitate diffusion of oxygen rather the instant invention is drawn 'to the binding of oxygen under low oxygen environments and maintaining cell energy status'. The limitation on which applicants rely is not found in the instant claims."

Applicants note that claims 28 and 35 have been amended to state that having increased levels of nonsymbiotic hemoglobin maintains energy status in low oxygen environments. However, applicants respectfully note that the examiner's assessment is incorrect. It is not that the instant invention "does not involve mitochondrial oxidation nor facilitate diffusion of oxygen" but rather that experiments described in the application as filed showed that non-symbiotic hemoglobin is not involved mitochondrial oxidation and does not facilitate diffusion of oxygen. Thus, as discussed in the previous response, an individual taking the disclosure of Andersson et al and attempting to show that the non symbiotic hemoglobin was acting in mitochondrial oxidative phosphorylation or facilitating the diffusion of oxygen would note that increased levels of the non symbiotic plant hemoglobins had no effect. The skilled artisan would therefore conclude that the non symbiotic plant hemoglobins were having no effect and that there would be no agronomic benefit from expressing them in plant tissues. Applicant also notes that as

discussed previously, Bailey teaches against the use of nonsymbiotic hemoglobins because these proteins have significantly different oxygen binding properties than those described by Bailey.

Thus, Bailey teaches that proteins having properties similar to those of the non-symbiotic hemoglobins would not be useful in Bailey's invention. Even if one was to combine the teachings of Andersson and Bailey, they would find that those properties ascribed to the non-symbiotic hemoglobins by Andersson would not be found in the resulting plants, leading one to conclude that the non-symbiotic hemoglobins had no effect. As such, the combination of these references teaches that there would be no benefit to breeding seeds to have high non-symbiotic hemoglobin (claim 35). Applicant also notes that the link between germination and non-symbiotic hemoglobin expression had not previously been shown (claim 37).

Claims 28-38 were rejected under 35 USC 102(e) as anticipated by Tarczynski et al (US Patent 5,563,324).

Attached herewith is the copy of US Patent 6,372,961 which was forwarded with the above-referenced office action as well as a copy of US Patent 5,563,324, also to Tarczynski. It is respectfully noted that the passages referred to by the examiner on page 4 of the office action correspond to passages from US Patent 6,372,961 which are also underlined in the copy of US Patent 6,372,961 provided with the response. Applicants note that the priority date of US Patent 6,372,961 is after applicant's

priority date and that in a telephone conversation with the undersigned regarding this issue, the Examiner agreed that US Patent 6,372,961 was not prior art. In view of this, it is respectfully requested that this objection be cancelled.

Applicants believe that all of the outstanding matters have been dealt with and the application is now in good order for allowance. In view of the foregoing, further and more favorable consideration is respectfully requested.

Respectfully submitted  
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Enc.(2)

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